

Physical and Cognitive Development in Late Adulthood

Chapter 17



Old Age Today



- Aging in the US is seen as undesirable
- Many stereotypes about aging
- Ageism
 - Prejudice or discrimination based on age

What is Old?



- **Primary Aging**
 - Gradual, inevitable process of aging
 - Occurs throughout years, despite efforts to slow it
- **Secondary Aging**
 - Results from disease, abuse, and disuse
 - Factors within a person's control
- **Functional Age**
 - How well a person functions physically and socially

Longevity and Aging



- **Life Expectancy**
 - Statistical likelihood of length of life, based on age and health status
- **Longevity**
 - Actual length of life
- **Life Span**
 - Longest period that members of species can live

Gender Differences in Life Expectancy



Women typically live longer than men

- Tend to take better care of themselves
- More likely to seek medical care

Regional & Ethnic Differences in Life Expectancy



Who lives to age 70?

- 6 out of 10 in *developed* countries
- 3 out of 10 in *developing* countries
- In the US, Caucasians live about 5 years longer than African Americans

Theories of Aging

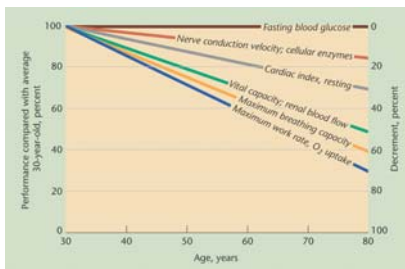
Genetic-Programming Theories	Variable-Rate Theories
Programmed Senescence	Wear-and-Tear
Endocrine	Free-Radical
Immunological	Rate-of-Living
	Autoimmune



Prolongevity: Expanding the Life Span

- **Survival Curves**
 - Until recently, supported limited life span
- **Hayflick Limit**
 - Estimated biological limit of humans at 110 years
- **Metabolism**
 - Limited caloric intake may extend life span

Decline in Organic and Systemic Functioning



The Aging Brain



- Brain loses weight over time
 - 10% by age 90
- Due to:
 - Shrinking neuron size in cerebral cortex
 - Loss of axons, dendrites, and synapses
- NOT due to:
 - Reduction in number of neurons



Brain Loss

- Cerebral cortex shrinks more rapidly in men
- Cortical atrophy more likely in:
 - Overweight women
 - Uneducated people
 - People who do not exercise
 - Those with diets low in fruits & vegetables

Older Eyes



- 80% of older people have trouble seeing
- Older eyes:
 - Need more light to see
 - Are more sensitive to glare
 - Have trouble locating signs
 - Have more trouble negotiating driving skills

Common Visual Impairments

- **Cataracts**
 - Cloudy or opaque areas of eyes
- **Age-related Macular Degeneration**
 - Retina loses ability to distinguish details
- **Glaucoma**
 - Irreversible damage to optic nerve by increased pressure



Hearing Impairment



Who has trouble hearing?

- 47% of men
- 30% of women
- 60% of people over age 85
- Whites more than Blacks

Physical Losses of Old Age



Older people experience diminished:

- Strength
- Endurance
- Balance
- Reaction time
- Sleep

Sexual Functioning in Late Adulthood



- Most older men and women enjoy sexual expression
- Consistent sexual activity over the years maintains sexual functioning
 - "Use it or lose it"

Sex Differences in Sexual Functioning

- **Men**
 - Take longer to become erect and ejaculate
 - Need more manual stimulation
 - Experience longer intervals between erections
- **Women**
 - Have less breast engorgement
 - Vagina may be less flexible



Health Status in Late Adulthood



Most older adults are in good general health for their age

- **Age 65 and older**
 - 73% are in good to excellent health
- **Over age 85**
 - Non-Hispanic Whites are in better health than Hispanics and Blacks



Common Chronic Conditions in Late Adulthood

- Heart Disease
- Cancer
- Stroke
- Lower Respiratory Disease



Lifestyle Influences on Quality Health

- Physical activity and exercise
- Healthy diet
- Regular health and dental exams

Mental Problems



- For most people, mental health improves with age
- Some problems with older age include:
 - Depression
 - Dementia
 - Physiologically-caused cognitive and behavioral decline



Causes of Dementia

- Alzheimer's Disease (AD)
- Parkinson's Disease
- Multi-Infarct Dementia (MD)
 - Caused by a series of small strokes



Symptoms of Alzheimer's Disease

- Memory impairment
- Deterioration of language
- Deficits in visual and spatial processing
- Repeating of questions
- Everyday tasks unfinished or forgotten
- Personality change (rigidity, egocentricity)
- Irritability or anxiety
- Lack of concentration



Alzheimer's: Causes and Risks

- **Neurofibrillary Tangles**
 - Twisted masses of dead neurons
- **Amyloid Plaque**
 - Build up of non-functioning tissue



Alzheimer's: Diagnosis & Prediction

- Can only be diagnosed definitively postmortem
- While alive:
 - Neurocognitive screening tests
 - Prospective memory tests



Alzheimer's: Treatment and Prevention

- Cholinesterase inhibitors
 - Aricept
- Immunotherapy
- More research needed to confirm:
 - Vitamin E
 - Anti-inflammatory drugs
 - Gingko biloba

Baltes's Dual-Process Model of Intelligence

1. Mechanics of Intelligence

- Neuro-hardware

2. Pragmatics of Intelligence

- Software – practical thinking, math, wisdom

Selective Optimization with Compensation (SOC)

- Using psychosocial resources to compensate for weakened mechanical abilities



Everyday Problem Solving

- Effectiveness remains stable until late adulthood, then declines
- Important factors include:
 - Emotional relevance of problem
 - Whether the problem is person or instrumental

Changes in Information-Processing Abilities

- **Declines:**
 - Abilities needed for complex new skills
 - Ability to switch focus or attention
- **Improvements:**
 - Skills that depend on habits and knowledge



Cognitive Abilities and Mortality

Some research has shown links between longevity and:

- IQ
- Reaction time



Encoding, Storage, and Retrieval

- **Encoding new information**
 - Older adults are less efficient
 - Requires creating new associations
- **Storage**
 - Increase in 'storage failure' with age
- **Retrieval**
 - Older adults have trouble
 - Do better on recognition than recall



Memory Loss & Brain Functioning

Areas where brain deterioration occurs:

- **Hippocampus**
 - Episodic memory
- **Frontal lobes**
 - Encoding and retrieval
- **Prefrontal cortex**
 - Working memory



Older Adults and Metamemory

Older adults, more than younger adults, report:

- More perceived change in memory
- Less memory capacity
- Less control over their memory



Can Cognitive Performance Improve?

- Deterioration is related to disuse
- Keeping the mind 'plastic' with training helps improve cognitive performance
 - **Mnemonics** – techniques to help people remember



Approaches to Studying Wisdom

- **Social judgments**
 - Exploring conceptions of a 'wise person'
- **Personality**
 - The culmination of lifetime growth
- **Cognitive expertise**
 - Breadth and depth of knowledge of life
- **Transcendence**
 - Detachment from preoccupation with self



Lifelong Learning

- Organized study by adults of all ages
 - Continuing education programs
- Older people learn best when materials and methods take into account their:
 - Psychological changes
 - Cognitive changes